





THE  
GEORGE WASHINGTON UNIVERSITY  
NAVY GRADUATE COMPTROLLERSHIP PROGRAM

THE COMPTROLLER'S ROLE  
IN THE  
FINANCIAL MANAGEMENT  
AT THE  
NAVAL RESEARCH LABORATORY

By

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For

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January, 1955



## PREFACE

A new era of financial management was inaugurated with the establishment of a Comptroller at the U. S. Naval Research Laboratory in Washington D. C. in October 1952. The establishment of this billet was a result of Public Law 216, 81st Congress, The National Act Amendments of 1949.

Public Law 216 requires the adaptation of the Navy's budget and fiscal administration to the general pattern and highly developed techniques for modern business methods of administration. The Naval Research Laboratory, the major one of its kind in the Navy, was designated as the first research organization of the Navy Department to be converted to operations under the Naval Industrial Fund type of accounting systems.

In compliance with the comptroller concept embodied in Public Law 216, the Office of the Comptroller was therefore established, and the position of Comptroller delineated. The duties of this position are comparable to those found in well established positions of financial management in similar organizations of modern business enterprise, and in addition thereto, include the responsibilities peculiar to the operation of government fiscal offices.

The writer had the unique experience of being assigned to the Laboratory at the time of this transition, and although transferred to sea duty at the time of its inception, has been most fortunate to be in a position to observe the Office of the Comptroller after the first two years of successful operations. This study was undertaken in an effort to learn financial management as practiced at the Laboratory, and to this end, it has been richly rewarding.





In gathering material for use in this effort, I was kindly received at all levels of management at the Laboratory. The Office of the Comptroller, under Commander E. H. Breed, and his Deputy Comptroller, Mr. M. C. Hendrickson, were most gracious in supplying information from which I have unsparingly adopted for use.





# TABLE OF CONTENTS

	Page
LIST OF ILLUSTRATIONS .....	v
Section	
1. THE NAVAL RESEARCH LABORATORY .....	1
II. THE INTERNAL ORGANIZATION OF THE LABORATORY ...	8
III. THE COMPTROLLERSHIP CONCEPT .....	13
IV. THE OFFICE OF THE COMPTROLLER AT THE LABORATORY .....	18
V. THE BUDGET FORMULATION AND EXECUTION .....	32
VI. ACCOUNTING AND REPORTING .....	45
VII. RESUME AND CONCLUSIONS .....	53
BIBLIOGRAPHY .....	56



## LIST OF ILLUSTRATIONS

Figure	Page
1. Organization of the Department of the Navy.....	4
2. Organization of the Office of Naval Research.....	5
3. Organization of the Naval Research Laboratory.....	10
4. Organization of the Office of the Comptroller of the Naval Research Laboratory.....	25
5. The Budget Division.....	27
6. The Accounting Division.....	29
7. The Disbursing Division.....	30
8. Form A-1 Problem Budget Estimate.....	39
9. Reverse Side of Form A-1 Problem Budget Estimate.....	41
10. Job Order Form.....	43
11. Reverse Side of Job Order Form.....	44
12. Form DD 412 Status of Project Orders.....	51
13. Standard Form 1080.....	52



SECTION I

THE NAVAL RESEARCH LABORATORY



As governmental research institutions go, the Naval Research Laboratory is an old organization. It is now in its 33rd year, having been commissioned on June 1, 1923. From this one might suppose that the financial management of the Laboratory had become long since a settled and hardened routine.

No supposition could be farther from fact. Until the last war, the Laboratory was a relatively small undertaking. It reached a peacetime peak in 1940 of 330 employees, one tenth of its present employment. During World War II it expanded in all directions increasing its facilities to a high of 4400 employees.

But in this period money was the commonest of resources and financial management not a necessity. Since World War II the Laboratory has continued as a very sizeable operation, conducted under constantly shifting economic, political, and strategic forces. Uncertainty as to the size of the defense effort, stresses of unification, and the unique factors surrounding science - - to name a few - - have been factors preventing the crystallization of standardized financial management routine.

Financial management as practiced at the Laboratory is at present, believed to have taken certain steps forward in this dynamic evolution of control of research. The techniques of management, and the development of proper management attitudes and know-how, are a tremendous challenge and will be for many years to come. As newer methods, functions, and techniques are evolved, research will be enhanced and encouraged with ever-increasing





effectiveness.

Financial management does not operate in a vacuum. Budgeting, Accounting, General and Administration functions are tools for coordinating and controlling work, and must be shaped to the needs of the organization it is to serve. An obvious start then would be to sketch in something of the background.

The Laboratory is now the largest constituent of the capital laboratories of the Office of Naval Research. That Office, created by statute in 1946<sup>1</sup> and now under the Executive Office of the Secretary of the Navy, as shown in figure 1, has two principal functions;

1. The initiation, coordination, promotion, and planning of naval research
2. The conduct of naval research in augmentation of and in conjunction with the research and development efforts of the material bureaus of the Navy, viz; Ships, Aeronautics, and Ordnance.<sup>2</sup>

The first of these functions is carried out mainly by the Research Division within the Office proper, chiefly through the use of contracts. The second function, the conduct of research, is largely the province of the Laboratory. Figure 2 shows the organization of the Office of Naval Research.

Under the Office of Naval Research the Laboratory's mission is as follows:

To support the Chief of Naval Research in his efforts to preserve National Security by initiating, planning, and conducting in the physical sciences applied research and development to meet the

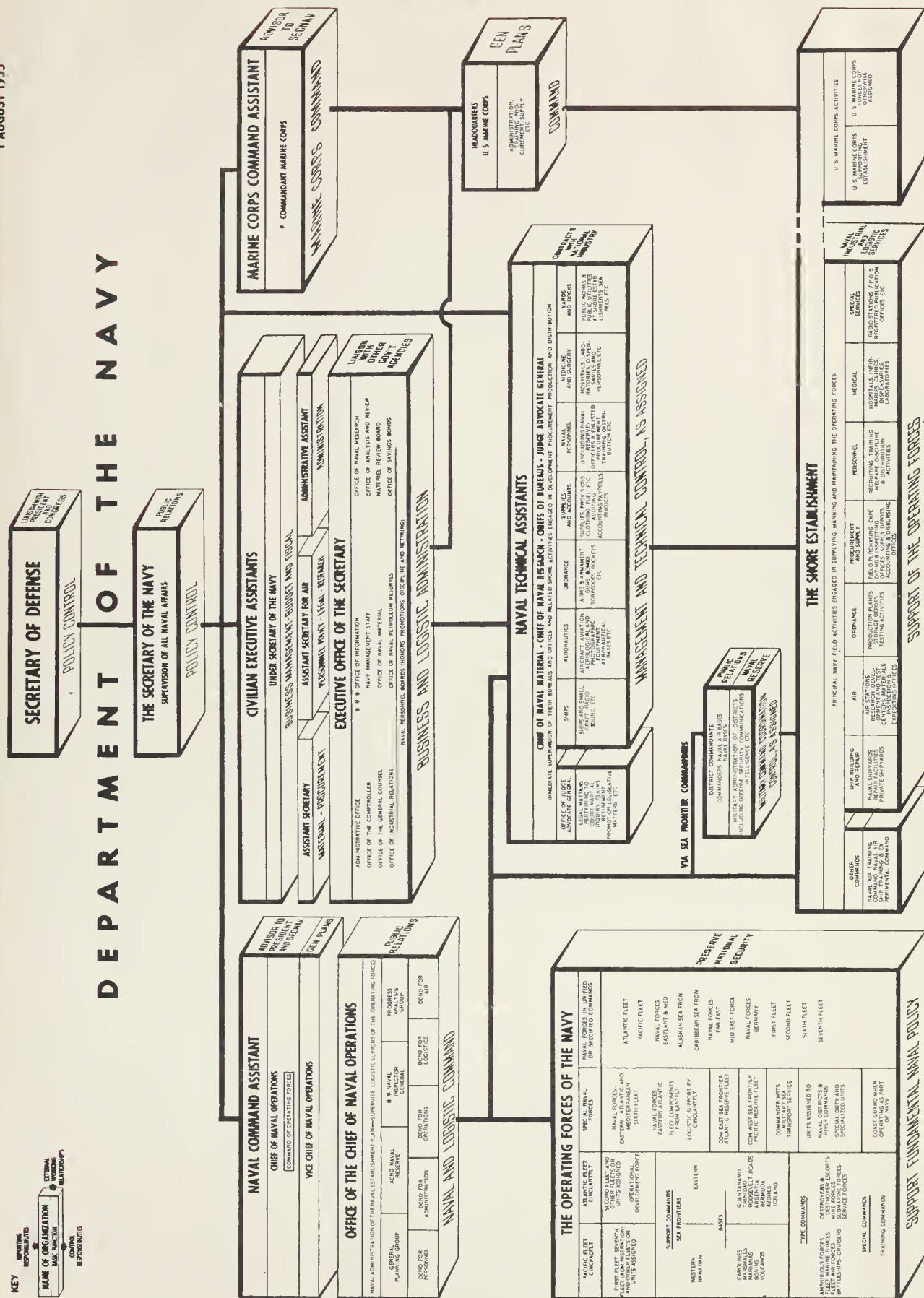
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1. Public Law 588, 79th Congress, 2nd Session (H. R. 5911)

2. Sec Nav Instruction 5430.20, 24 June 1954



# DEPARTMENT OF THE NAVY



Prepared By: Navy Management Staff,  
Department of the Navy

\* RESPONSIBLE TO CNO WHEN CNO IS ACTING IN HIS CAPACITY AS NAVAL EXECUTIVE TO SECNAV

**\* RESPONSIBLE TO CNO WHEN CNO IS ACTING**

Secretary of the Navy

R 748

FIGURE 1





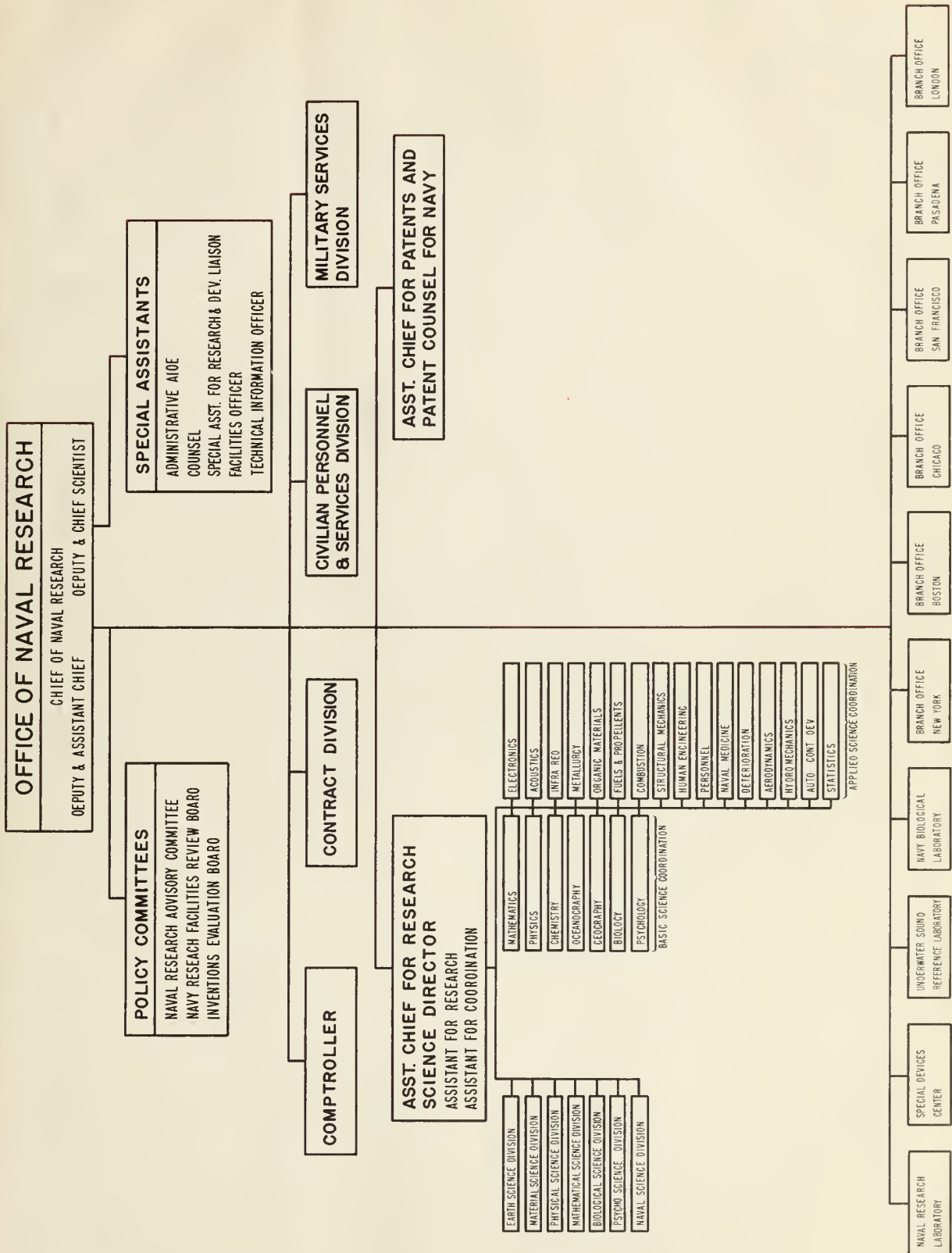


FIGURE 2





immediate needs for equipment and materials, to increase the combat effectiveness of the Navy, and fundamental research and experimentation in anticipation of future requirements.<sup>3</sup>

Having provided it with this broad mission, the Office of Naval Research has seen fit to exercise only a broad and general supervision over the Laboratory's operation and program. Although they may from time to time direct the Laboratory to undertake a specific line of work, it has nevertheless given the Laboratory wide freedom to initiate its own program and to coordinate with requests for work from activities outside the Office of Naval Research.

In its early years, the Laboratory received virtually all of its work from the several Navy Bureaus. Since its transfer to the Office of Naval Research, it has continued to receive a considerable amount from these sources, and from similiar groups outside of Navy. But in keeping with its position of common relationship to the more specialized activities within the Navy, it has also broadened its spectrum in the Basic Sciences to include many areas of work as yet too fundamental to interest any material group.

By any standard one chooses to apply the Laboratory is a big activity. It is the largest multi-purpose research organization in the military establishment and among the largest organizations of its kind in the country.

Physically the Laboratory occupies over fifty acres of grounds containing over fifty permanent-type structures and a number of others.



Distributed throughout these buildings are some 3000 employees and fifty to sixty military personnel. About 1000 are professional scientists, the remaining being white and blue collared workers. <sup>4</sup>

While the Laboratory now has but one field installation, it does much of its work at locations distant from its home grounds. It makes considerable use, for example, of the Proving Grounds at White Sands, New Mexico, and the facilities of Navy bases like those at New London, Philadelphia, Boston, etc. On occasions it sends its scientists to such remote places as Alaska, Anartica, and Brazil. It also frequently employs sea-going craft provided by the fleet and aircraft from local Air Stations.

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4. C. G. Grant, and others, Budgeting for Research at the Naval Research Laboratory, (December 13, 1950)



## SECTION II

### THE INTERNAL ORGANIZATION OF THE LABORATORY





Title IV of Public Law 216, 81st Congress,<sup>5</sup> effected a revision of approach to financial operations and management which was a long stride in the direction of implementing the philosophy's and concepts of management in Department of Defense activities. Some of these concepts will be dealt with in part 3. The act, however, had a profound effect upon the organizational structure of the Laboratory, resulting in a three year evolution, as shown in Figure 3.

Basically this chart shows that under the Director there is a line organization of the Research Department headed up by the Director of Research, a Congressional appointee, comprised at its basic structure of thirteen research divisions, each an operating laboratory within a definite field of Research. To coordinate this effort, this Department is divided into three major scientific fields; Electronics, Materials, and Nucleonics, each directed by a senior scientist of super Civil Service grade, whose title is Associate Director of Research. The Electronics field consists of five divisions; Applications Research, Electronics, Radio, Radar, and Sound. The Materials field consists of four divisions; Chemistry, Metallurgy, Mechanics, and Solid State. The Nucleonics field consists of four divisions also; Atmosphere and Astrophysics, Nucleonics, Optics, and Radiation.

In order that these research divisions may function in the manner for

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5. Public Law 216, 81st Congress, National Security Act Amendments (10 August 1949)





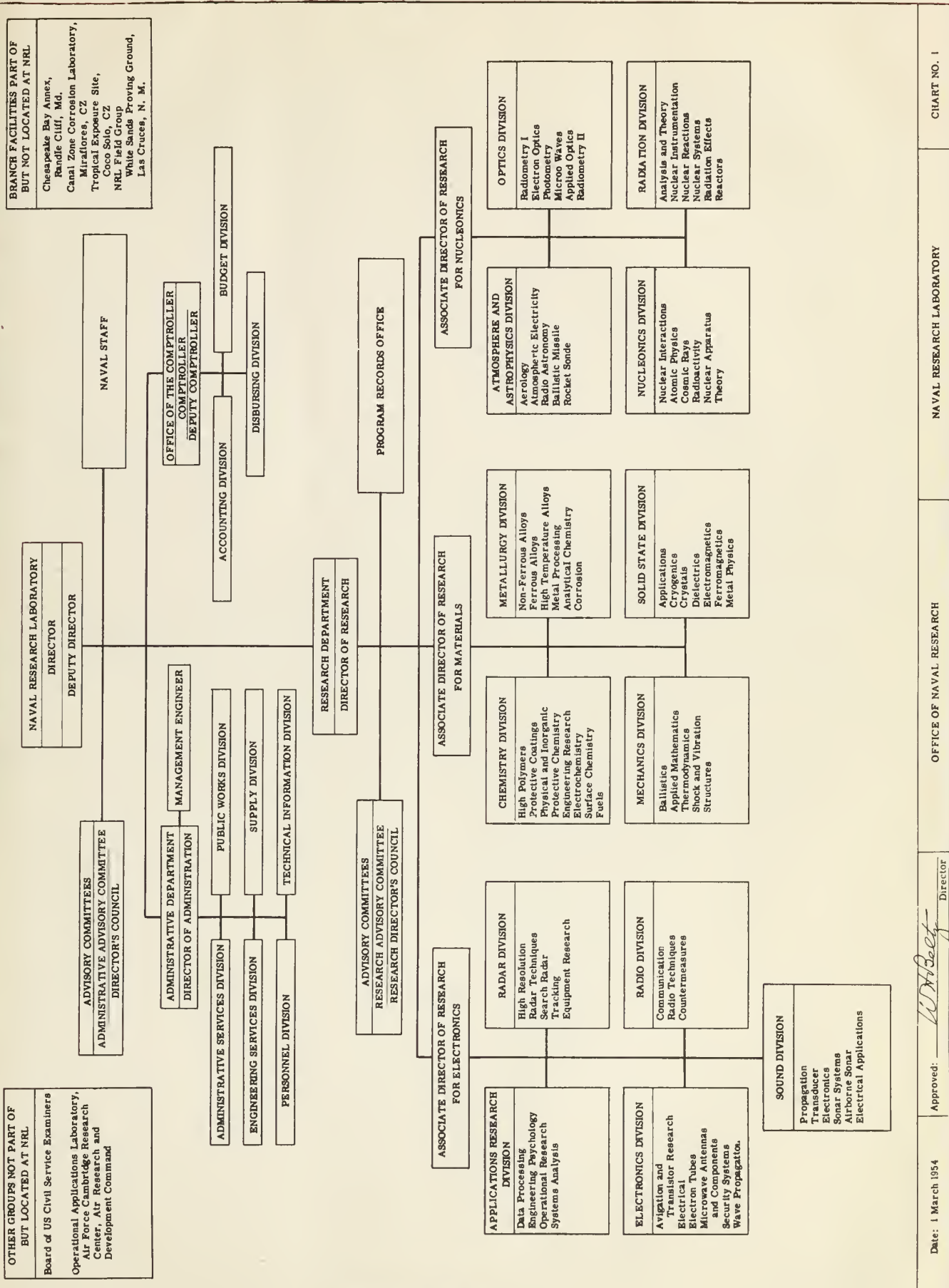


Figure three



which they were organized, the Director has two staff-service departments under him; the Administrative Department, and the Office of the Comptroller. As shown, the Administrative Department is headed by the Director of Administration who is also the Deputy Director. This office has attached to it in a pure staff capacity the Management Engineer, and coordinates the services to research and the Laboratory as a whole, the six general functions of Administrative Services, Engineering Services, Personnel, Public Works, Supply, and Technical Information.

The Office of the Comptroller is comprised of three major functions as shown, and will be discussed later. Suffice for the present to indicate the organizational echelon of the Comptroller and his relationship to the Director and other organizational components.

As to top management of the Laboratory, it should be noted that the Director's Advisory Committee is shown in the position of staff to the Director. This committee in reality acts as "Top Management," being composed of the Director, as Chairman, the Deputy Director, the Director of Research, the three Associate Directors of Research, the Senior Naval Liason Officer, the Comptroller, and the Management Engineer, as recorder. The committee meets each Monday morning and considers all matters of major policy, receives advice and communications from the Director on matters coming to him from higher authority, passes on major actions requiring approval at the Director's level, and in effect acts in the capacity of what the Director calls his "Board of Directors."





The Naval Staff is composed of a senior Naval Liason Officer, a Deputy Senior Liason Officer, and a group of highly trained officers (formerly called Program Officers) who act in liason capacity between the scientific divisions and the Naval Establishment. They are organized by research operational requirement, and advise and consult with the Branches of the scientific divisions across the board.

In general, it can be said that the internal organization of the Laboratory follows the pattern conceived originally by the Consulting Board - that of a Laboratory staffed by civilian scientists, under Navy management devoted to the scientific interests of the Navy. <sup>6</sup>

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6. Pamphlet, Research at N. R. L. (1953)





SECTION III

THE COMPTROLLERSHIP CONCEPT



The impetus behind the Comptrollership in the Navy is the basic legal directive, the National Security Amendments of 1949 inspired by the report of the Hoover Commission on Reorganization of the National Security Organization.<sup>7</sup> In it the following guide lines were established.<sup>8</sup>

(Sec. 401) There is hereby established the Comptroller of the Department of Defense. The Comptroller shall establish and supervise the execution of principles, policies, and procedures to be followed in connection with organizational and administrative matters relating to:

- a 1. The preparation and execution of the budgets
- 2. Fiscal, cost, operating and capital property accounting
- 3. Progress and statistical reporting
- 4. Internal audit, and
- b policies and procedures relating to the expenditure and collection of funds administered by the Department of Defense.

(Sec. 402) The Secretary of each military department shall cause budgeting, accounting and statistical reporting, internal audit and administrative structure and managerial procedure relating thereto in (his) department to be organized and conducted in a manner consistent with the operations of the Comptroller of the Department of Defense.

(Sec. 405) In order to more effectively control and account for the cost of programs and work performed in the Department of Defense, the Secretary of Defense is authorized to require the establishment of working capital funds for the purpose of providing working capital for such industrial type activities as provide common services within or among the departments and agencies of the Department of Defense. The secretaries of the military departments shall allocate responsibility within their respective departments in such a manner as to effect the most economical and efficient organization for which working capital funds are authorized by this section.

Implicit in the above abstracts of the 81st Congress, is the intent to force implementation of the Comptrollership concept in the logistic activities of the Armed Forces.<sup>9</sup> From these words stem ample legal leverage to

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7. Public Law 162, 80th Congress (July 7, 1947)

8. Public Law 216, 81st Congress (Aug. 10, 1949)

9. Sec. Nav. Instruction 5400.4 (Nov. 18, 1953)





exert through the Defense Comptroller, a determining influence for years to come on the techniques and organizations for the conduct of the Navy's financial management. Whether we like the idea is immaterial. Comptrollers are with us to stay awhile.<sup>10</sup>

A comprehensive analysis of the language of the above sections reveals a striking resemblance to the by-law provisions advocated by the Controller's Institute of America.<sup>11</sup> Both documents place emphasis and economy and efficiency, this is not a new concept in Naval organization. Naval Regulations specifically lay emphasis upon these features and make Commanding Officers responsible for them within their commands.

The newness of the law lies in the recognition of the need to organize certain tools of management into a complete package of staff service for the line command. As an organization grows in size and complexity, decisions effecting the proper coordination control of its component parts depend more and more upon the availability of pertinent factual information, gathered, analyzed and presented in complete, concise and objective form.

This philosophy is further emphasized by Dean Jackson:

The underlying cause for the change in organization leading to the present stage of controllership development are to be found chiefly in two basic requirements of business (a) the increasing necessity for a greater degree of concentration and specialization in the conduct of accounting, auditing, and tax functions; and (b) the need not only for preserving one of the important "checks and balances" of the corporate mechanism - where

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10. Rear Admiral Clextan, Comptrollership, Address given at George Washington University, (Dec. 17, 1954)

11. Lillian Doris, Corporate Treasurer's and Controller's Handbook (New York Prentice-Hall & Co. 1951) p. 25





under the process of accounting and internal audit may better serve as an independent check upon the receipt, disbursement and custody of the corporate funds - but also to further strengthen the controls over expenditures, costs, and profits so essential to the successful conduct of business today. Both requirements have increased immeasurably in recent years through the increase in size and complexity of our modern industrial units.<sup>12</sup>

Thus, the law provided in the military service, the framework whereby fiscal matters and business activities related thereto, may be organized along proven industrial management principles in a uniform and consistent manner. The act set up performance budgeting, industrial funding, and a separation between operating and capital programs, in addition to requiring the establishment of comptrollers in the Department of Defense and the three military departments.<sup>13</sup>

The charter originally formalizing the Office of the Comptroller of the Navy was released by the Secretary of the Navy as early as June 1, 1950. The duties and responsibilities of the Comptroller of the Navy were defined as follows:

- a. The mission of the Comptroller is to advise and assist the Secretary of the Navy in developing and maintaining efficiency and economy through budgetary and fiscal procedures. In general the Comptroller will function in a staff capacity for the conduct of auditing operations essential to the proper discharge of his statutory responsibility.
- b. Subject to the authority of the Secretary, he is directly responsible for budgeting, accounting, progress and statistical reporting internal audit, and for the administrative organizational structure and managerial procedures relating to such responsibilities within the Department of the Navy and for the coordination and correlation of matters under his cognizance.

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12. J. Hugh Jackson, The Controller: His Functions and Organization. Dickenson Lectures in Accounting (Cambridge Harvard Univ. Press, 1949) p. 14

13. Public Law 216, Public Law 216, 81st Congress (Aug. 10, 1949)



with the Controllers of the Department of Defense, Army, and Air Force and other agencies of the Government. <sup>14</sup>

The National Security Act as amended established the framework under which the office of Comptroller of the Navy was organized, however, it did not include or require similar comptrollership organizations at lower levels.

The Secretary of the Navy by instruction set forth the policy :

To establish Comptroller organizations in all bureaus and offices, Navy Department, Headquarters, Marine Corps, and major activities of the Navy and Marine Corps. It is desired that the program of establishment currently in progress be accelerated as rapidly as may be practicable. Establishment of comptrollers to perform published functions is strongly recommended as a major step towards improved financial management as well as a direct service to command authority. <sup>15</sup>

Having established a basic historical background and the legal justification in sections 1, 2, and 3, let us now turn to Comptrollership, and the financial management of the Naval Research Laboratory.

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14. Charter of Navy Comptroller (June 1, 1950)

15. Sec. Nav. Instruction 5400.4, (Nov. 18, 1953)





SECTION IV

OFFICE OF THE COMPTROLLER AT THE LABORATORY





The purpose of the Comptrollership organization at the Laboratory is to assist the Director in the financial management of his activity and in doing so, the Comptroller should have available at all times for the Director the answers to the following questions:

1. What is the plan under which we are operating?
2. What are our accomplishments under observation as compared with the plan?
3. Why do the accomplishments differ from the plan?
4. What can top-management do so that the plan can be accomplished?

Before proceeding further it would be advisable, perhaps, if the term Comptrollership were defined. Comptrollership is simply sound financial planning and management and consists principally of the following functions:<sup>16</sup>

1. Budget Formulation
2. Budget Execution
3. Progress Reporting
4. Analysis of Performance
5. Accounting

In establishing the office of the Comptroller requiring the adaption of the Navy's budget and fiscal administration to the general pattern and highly developed techniques for modern business, the Director must have been impressed with the tremendous import of his directive, in that the Laboratory was designated as the first research organization of the Navy Department to be

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16. BuAer, Comptrollership News (November 1954) p. 1



converted to operations under the Navy Industrial Fund type accounting system. According to Bradshaw and Hull:

There is still considerable variation in the duties assigned to the Controller, and to the recognition given to the position in management circles. In some instances he is little more than a "glorified" bookkeeper, reporting to an assistant secretary or an assistant treasurer, whereas in other instances he is a member of top management.<sup>17</sup>

The latter type of position is associated with Comptrollership at the Laboratory. It entails the financial responsibility for the Director of the Laboratory, in which a revolving fund of \$7,500,000 is utilized for all financial transactions of the Laboratory (exclusive of plant account responsibility)

The scope of the work assumed paramount importance inasmuch as the actions taken, procedures developed, decisions made, and overall operating financial pattern became the criteria for developing Navy Industrial Fund systems for the management of other research laboratories of the Navy and the Department of Defense. Therefore the extent of understanding of general objectives of research management, management problems of the Naval Research Laboratory, budget and accounting policies and techniques in the field of research within the government fiscal procedures, and the application of modern commercial management, budget, and accounting theory and practice to governmental research organizations is tantamount to successful implementation at the Naval Research Laboratory, and also have a marked effect upon the evolving of similar (comparable types in the Department of Defense)

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17. Bradshaw and Hull, Editors, Controllershship In Modern Management Irwin, Inc., Chicago, Ill. (1950) p. 9





organizations for financial management at other Laboratories.

The Naval Research Laboratory is the major laboratory of the Navy, having as its mission the conduct of basic and applied research in the physical sciences. It provides research not only for the Navy but for all other Departments of the Department of Defense as well as the Atomic Energy Commission, other government agencies, and foreign governments. Its annual financial operations are in excess of \$25,000,000. Being an establishment performing important research which requires the comptroller to cope with problems affecting budgeting, accounting, and other financial factors not only within the Laboratory's system and the Navy Accounting System, but by cross-servicing and inter-departmental accounting with other governmental agencies. The Comptroller of the Laboratory is responsible to insure the integrity of the Working Capital Fund and to maintain smooth financial arrangements in order that the research effort may continue at all times as planned by the Director of Research.

The organization of the Office of the Comptroller was therefore authorized to perform:

1. budget functions which determine the funding of the research effort coordinating funding from many sources of support;
2. internal allocations to the research effort on over 400 research jobs from over 350 sources of support;





3. determination of the overhead rate required to support the administrative and general services to the research effort and the allocation of funds to those administrative and general functions;
4. determine, recommend plans, and implement the planning of and allocations for plant account equipment required for the support of the research effort;
5. establish proper functions of accounting within these budget patterns, and the reporting and statistical presentation of financial facts related to budget and accounting;
6. disbursements for all payables, civilain and military payment of all public vouchers, and rendition of disbursing returns.<sup>18</sup>

The establishment of these functions within one area of financial responsibility at the Research Laboratory is a relatively new concept in the Navy Department, and is one which requires originality and initiative in order to insure accomplishment of the objectives. Responsibility for financial management is largely decentralized to the principles of accountability, therefore new reporting and statistical presentations must be constantly developed in order that the facts upon which the accountability to be accepted may be properly presented.

Judgment used in the preparation of the budget effects not only the internal research and administrative effort, but also the relationships to the various Bureaus of the Navy Department, as well as the Office of Naval Research and the other government agencies and their budgets. Inasmuch as the evaluation of budgets and the Accounting for specific jobs of research are essential in

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18. Unpublished Organizational Information of the Naval Research Laboratory.



developing acceptance by the sponsors for funding, the planning for future research effort and funding thereof is to a large extent effected by the judgment exhibited by the Comptroller. One of the major areas in which such judgment can be exerted is in the development of controls within the cost of Administrative and General expenses. The establishment of the proper overhead rates in relation to research effort and the controlling of costs within the funds available from such rates, is a major responsibility of financial management that will reflect in the financing of the research effort.

In the development of the system of recording, reporting, analysis, and recommending action on financial matters, coordination of manual and electrical accounting machine methods are required. By continual development, efficiency in operating techniques within the Office of the Comptroller and evolving of machine accounting methods and procedures will increase, and by proper application, produce a system with the flexibility to perform all financial functions required in controlling a field of effort as diverse and evolving as research.

In carrying out the rather unique and complex functions as outlined in the bizarre fashion above, the Director had to chose a man of unusual talents and untiring energy. For this difficult task, Commander E. H. Breed (S. C.) U. S. Navy was chosen in preference to a civilian, the choice being made strictly on the grounds of qualifications, experience, and demonstrated performance. Commander Breed was considered a natural for the selection;





his unusual background consists of the following:

A. B. , M. B. A. , University of Stanford

C. P. A. State of California

Member California State Society C. P. A. 's

Member A. I. A.

Associate with C. P. A. firm of Lester, Herrick, and Herrick (4 years)

Assistant Comptroller, University of Stanford (2 years)

Supply Corps, U. S. Navy, 1941-1952

Comptroller, Naval Research Laboratory, 1952 to present

As the Naval Research Laboratory's first Comptroller, Commander Breed set up the organization of the Office of the Comptroller as shown in Figure 4. Under this functional structure are the Comptroller and his Deputy Comptroller. The operations of the office are performed within three major divisions; Budget Division, Accounting Division, and the Disbursing Division. It should be noted that the audit function is delineated as staff to the Comptroller under the heading of Special Assistant. In the Laboratory it is stressed that the internal audit is a staff - a pure staff - function responsible to the Comptroller and with no direct authority except in a staff capacity within that exercised by the Office of the Comptroller. The evolving of the internal audit program proceeded on the basic premise that auditors should be a private concern of the Comptroller, and chosen with care, individually and slowly, over a period of time. It is believed that this function should not be implemented full blown overnight by fiat.





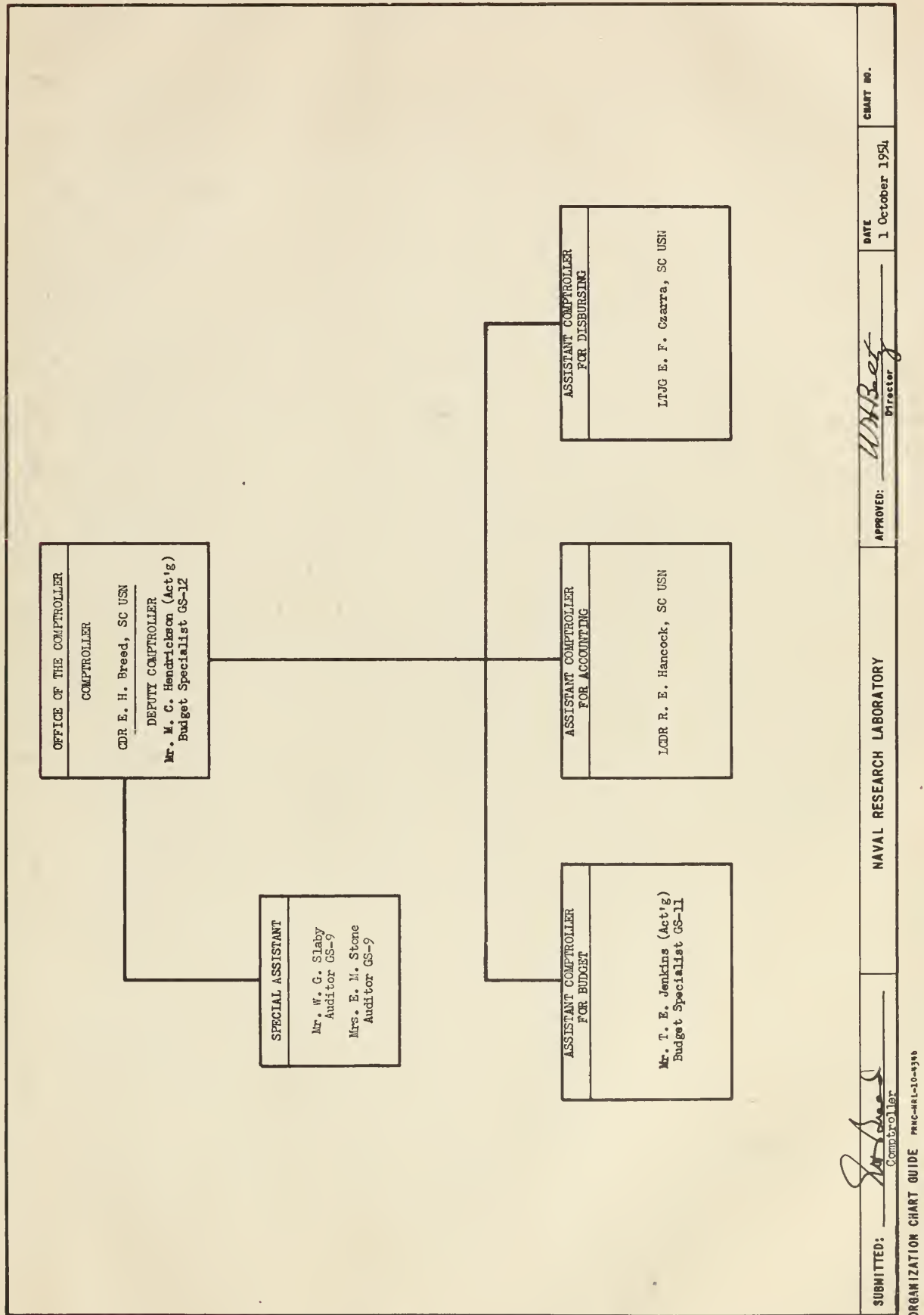


FIGURE 4



Because of the special talents required, and the responsibilities related to each general function, the operations are divided into three divisions, each under an Assistant Comptroller. The title "Assistant Comptroller" in lieu of "Budget Officer", "Accounting Officer", and "Disbursing Officer" stems from the philosophy in the development of the Office of the Comptroller; that of the integration of all phases of management - physically and mentally. This same approach is expounded by Richard M. Padgett.<sup>19</sup> The advantages of this approach are twofold: each is responsible to the Comptroller for the operation of his division and the performance of his particular function, but each also has a responsibility as an Assistant Comptroller for the management of the entire financial function. A weekly staff meeting on Tuesday morning is not just an upward and downward communication medium; it takes its cue from the philosophy expressed relative to the functioning of the Director's Advisory Committee. The Comptroller's Staff - - Comptroller, as Chairman, Deputy Comptroller, Auditor, and three Assistant Comptrollers are the "Board of Directors" of the Office of the Comptroller.

The level below the Divisions, called the Branch level, is present in the major functions. The Budget function, as shown in Figure 5 is performed by analysts in two branches - - one having the responsibility for direct research budgets, and the other having the responsibility for the overhead or general and administrative budgets and the overall manpower budget.

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19. Richard M. Padgett, Tommorows Responsibilities for the Controller, The Controller (January 1947) p. 8



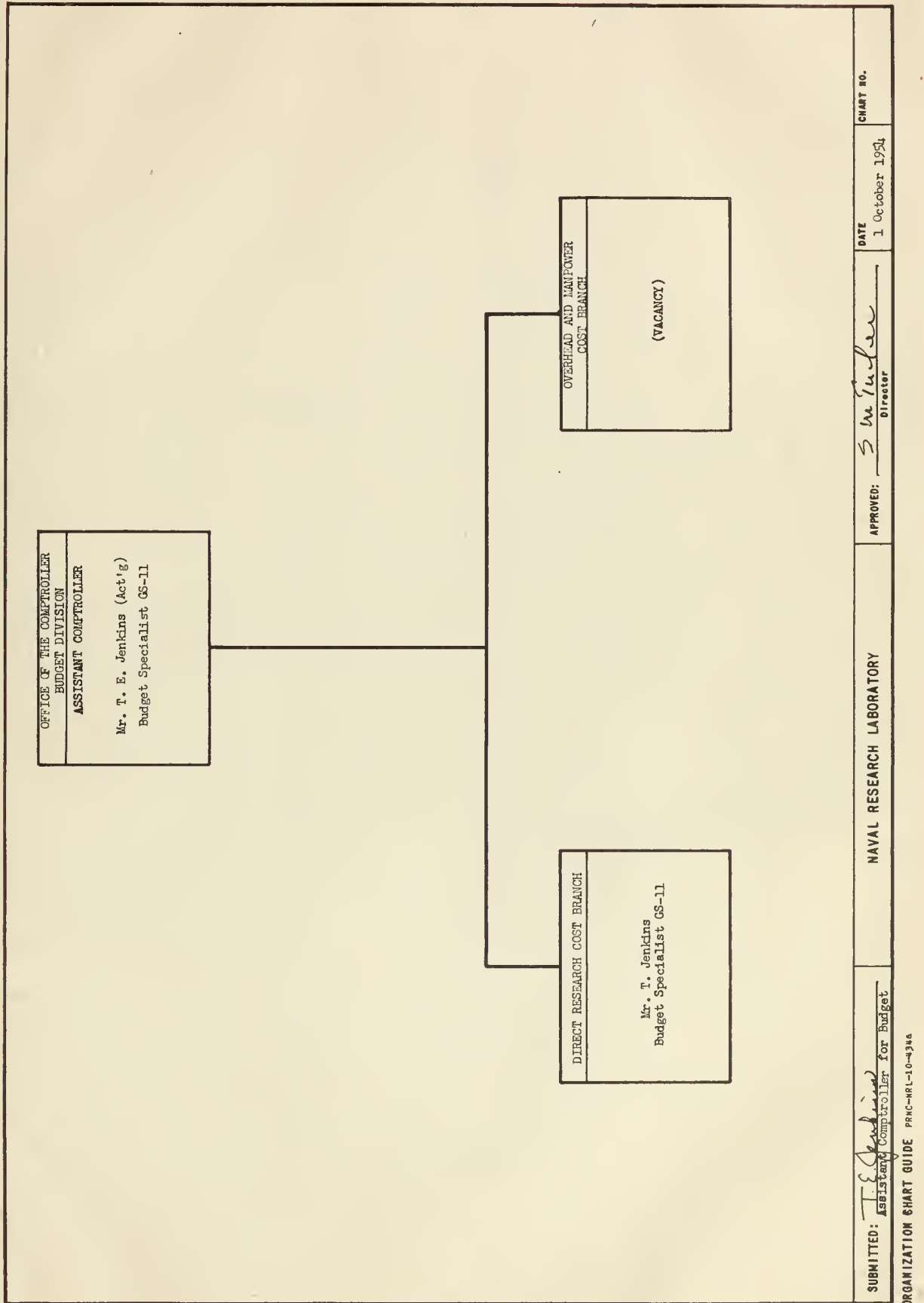


FIGURE 5





The Accounting function is performed in the three Branches as shown in Figure 6. The General Accounting Branch is responsible for the general ledgers, obligation and appropriation controls, preparation of cost and financial statements, and the other general coordinating accounting functions. The Personnel Services Accounting Branch, outlined in Figure 7, is responsible for all time keeping, payroll accounting, retirement records, and insurance. The Property Accounting Branch, turning back to Figure 6, is responsible for stores accounting, and plant property accounting. It should be noted that the Assistant Comptroller for Accounting has in a staff or service function under him, separate responsibilities of Project Planner for machine accounting operations, and the machine accounting services. Since all of the accounting and record keeping is done on tabulating machines, it is the responsibility of the Project Planner to keep all machine operations adequately programmed, and to advise and consult with the Assistant Comptroller on all new programming or reprogramming. Also, for the same reason, the Machine Accounting Services should be responsible to the Assistant Comptroller for the performance of all machine services for all of the operating branches of the Accounting Division, as well as for the Budget and Disbursing Divisions.

In the operations of the Laboratory under the integrated financial management and its organization outlined above, a sincere effort was constantly applied in keeping with the best approved concepts of industrial



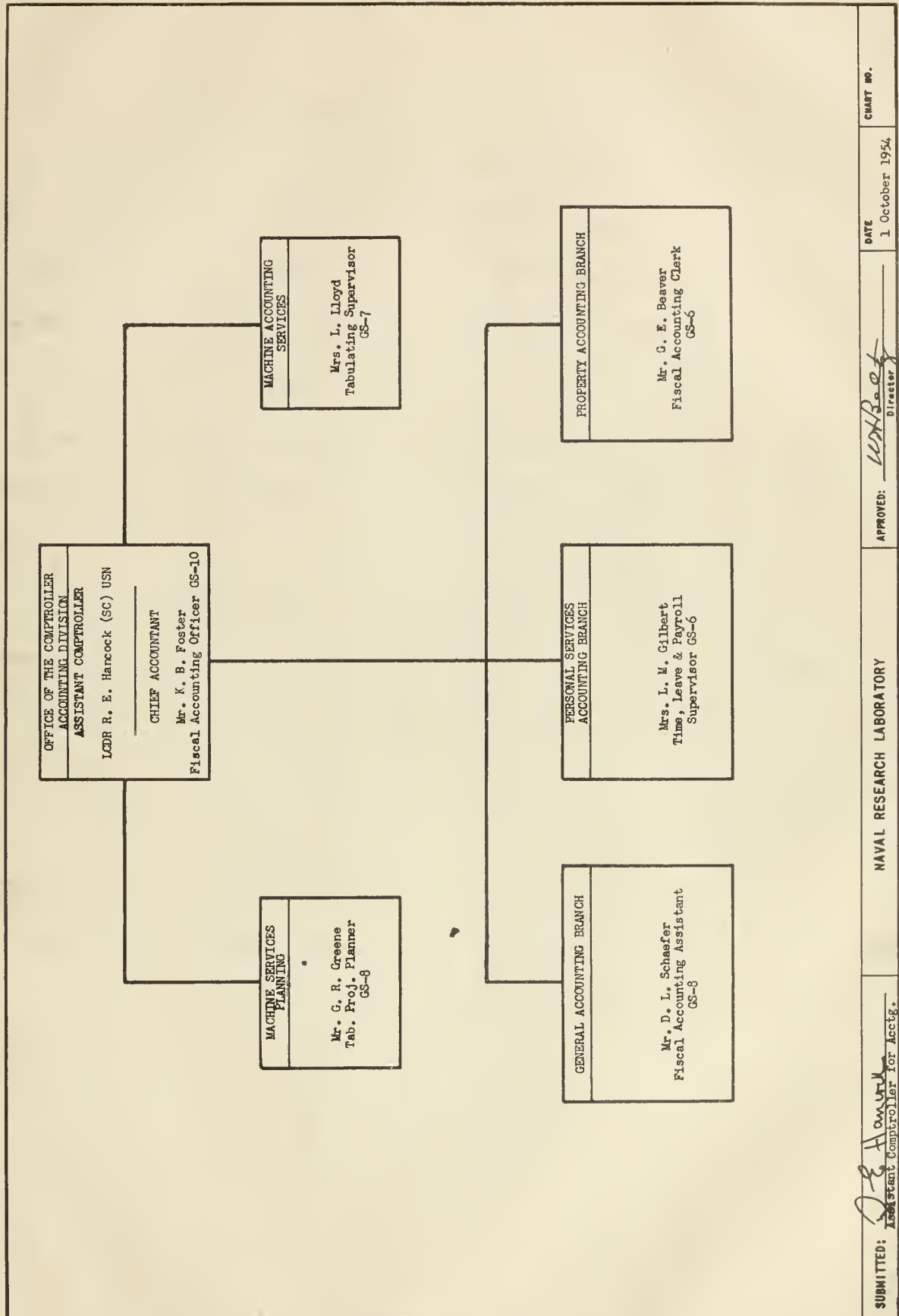


FIGURE 6





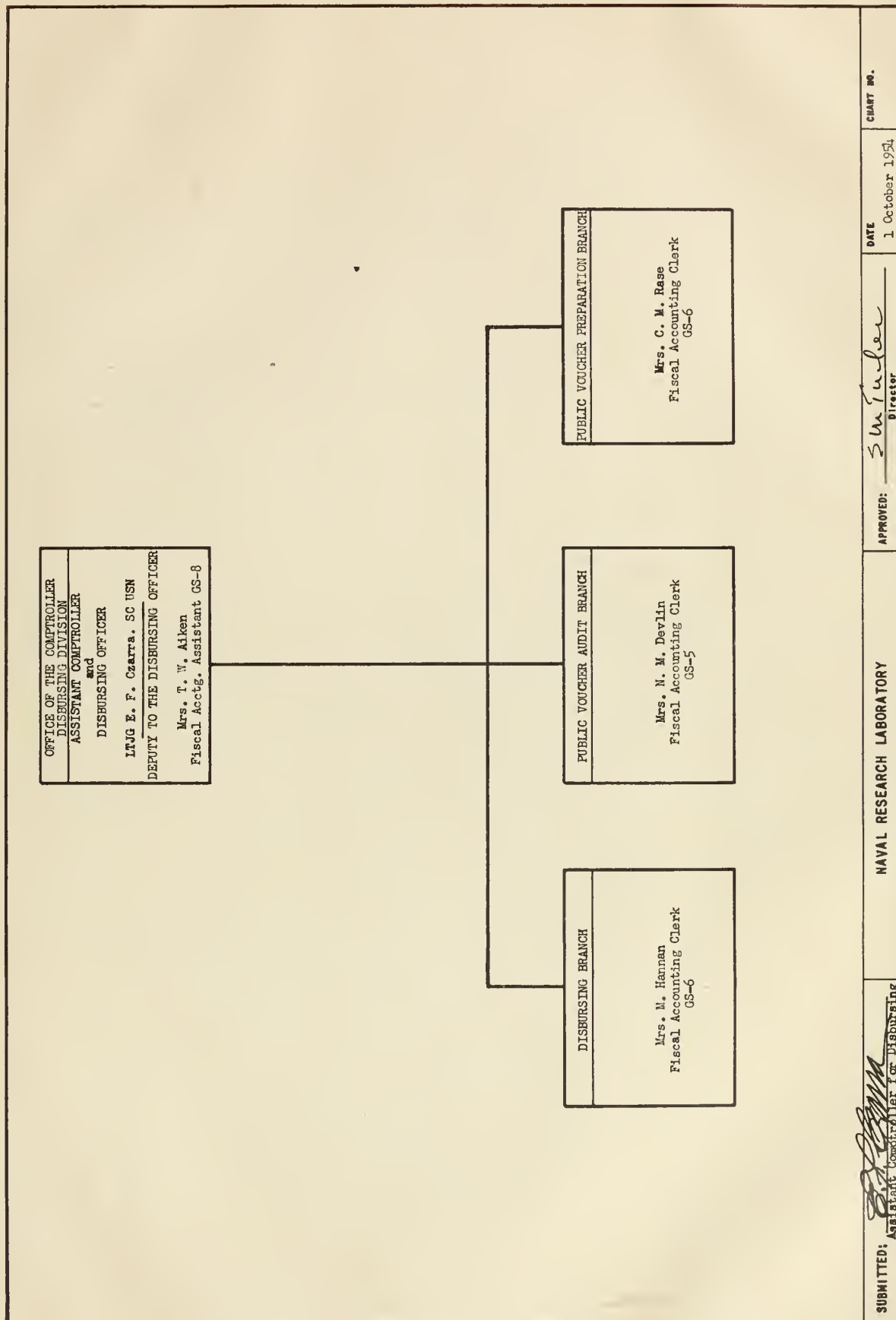


FIGURE 7

SUBMITTED: *[Signature]*  
Assistant Comptroller for Disbursing

NAVAL RESEARCH LABORATORY

APPROVED: *[Signature]*  
Director

DATE  
1 October 1954

CHART NO.



financial management. In applying these concepts, it should be realized that the development involved many sets of people, and were experimented with over many years of thoughtful development by the devoted efforts and the coordinated thinking at the Laboratory.



SECTION V  
BUDGET FORMULATION AND EXECUTION





A working definition as developed at the Laboratory regarding budget is:

"A plan of future operations translated into manpower and monetary requirements." <sup>20</sup>

meaning that the thoughts are in terms of a going concern of some 3200 people performing a mission for the Navy, which requires an integrated plan based upon each of the 3200 individuals performing a useful function. In order to develop such a plan and to maintain the integrity of the planning from year to year, a set of six principles were evolved regarding budgeting for research and its related functions. <sup>21</sup>

The first principle is called the "Principle of Grass Root Budgeting."

The budget, in order to be the best reflection of operating plans, should be initiated at the lowest possible operating levels. Research is approached from the viewpoint that the results obtained are the products of men's minds. The responsibility in planning lies in determining from the best sources, what men are going to perform, what research effort, and what they will need in the way of necessary materials to support their effort. The program planners of each research effort are asked to do a thoughtful job of initiating the primary planning steps. The Comptroller's responsibility is then to study their initial plans, and coordinate all of the financial and manpower requirements of the Laboratory as a whole.

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20. C. G. Grant and other, Budgeting for Research at the Naval Research Laboratory (December 13, 1953)

21. E. H. Breed Financial Management at the Naval Research Laboratory (Unpublished) p. 11



The second principle is called the "Principle of Contained Paperwork".

Most activities must submit a number of different kinds of budgets each year. While it is desirable to have each of these submissions to be the best reflection of operating plans as known at the particular time, a vast amount of work would be involved in going back to the operating people each time for a new "grassroot" submission. The problem is solved by requiring a formal budget from the operating people each six months. Thus, by calling for information on a reasonable schedule, the budget staff can make whatever outside submissions are required, using data no more than six months old. Included in this phase is the philosophy that Comptrollership is not only the performance of functions, but the coordination of planning and all its aspects. To quote Dean Jackson once again:

"The Controller is first and foremost a steel man, or a tire man, or an automobile man." <sup>21</sup>

So the Comptroller staff of the Laboratory, though not scientists or engineers, are sufficiently aware of program objectives and scientific planning to interpolate the planning into the necessary budget submissions with appreciation and understanding.

The third is called "Principle of Graduated Accuracy". The first phase of this principle is the function of Time: each six month budget submission from the operators covers three fiscal years: the present year, the impending year, and the budget year. Thus, six distinct reviews are made of each fiscal year.

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<sup>21</sup>. Jackson, op. cit. p. 26







The first is eighteen months before the start of the year, the last as the year is nearing completion. The first estimate will be accurate only in terms of financial magnitude. However, each six months the estimates for a particular year will become increasingly more accurate, until the last review when the estimate should be a very accurate picture of actual costs. The second phase of this principle is the function of Organization. The smallest budgeting unit is the research project or administrative function. The first coordinating level is the Branch, then the Division, then the Department, and finally the Laboratory as a whole. Percentage-wise, the least accuracy can be expected in estimating for the research project or function. Greater estimating accuracy is derived by totaling the Branch work-load, and similarly still greater percentage accuracy can be expected at the Division, Department, and finally at the Laboratory level. Here again, the Comptroller's staff performs the valuable function of thoughtful coordination. The Budget staff, long familiar with the problems of each Division and Branch, is able to evaluate through each step of graduation the ultimate accuracy. This leads to the remaining principles.

The fourth is called the "Principle of Significant Variation". The regular costs of conducting a research project are a function of the type of research and the number of research personnel applied. It is possible to derive a "rule of thumb" amount to gauge the expected routine costs of a particular type of research per research person. There are, however, large nonrecurring costs which will not fit any such rule. These are defined as outside procurements of



\$5000 or more. Special review is made of these items as factors which will cause cost variations in a research project, not dependent on the number of budgeted research people. Estimates of budget requirements based on numbers of people involved in the effort can be reasonably accurate from the first stage of budget development: the major significant variation requiring constant review and consideration as planning becomes more definite, are these non-recurring major procurements. So in evaluating budget estimates, the staff must evaluate the type of research problem, any significant variations from the expected normal of the "thumb rule" on routine costs per person, and the reasonable approach to the requirements for non-recurring major procurements. This review of each problem builds up a fund of knowledge during the six reviews to which each problem is submitted during its "budget life".

The fifth principle fits logically into the outlined scheme and is called the "Principle of Dehydrated Estimates". While many fundamental research projects continue indefinitely, there are applied and development projects which naturally terminate with the completion of a system or piece of equipment. As soon as projects are terminated, a new one is assigned by laboratory sponsors. If, in any particular budget submission, operators were forced to budget within the work projects then aboard, there would be a natural compulsion to overstate the amount of time required to complete a job in order that all research personnel would be taken into account in future budget periods. In order to avoid such forced budgeting, operators are allowed to show budgets for proposed





projects even though these may be visualized only in vague terms. This procedure not only works in the direction of encouraging the project planners to be realistic in the estimate, to dehydrate their own plans realistically, but serves to warn the Comptroller of the areas in which future plans are not so firm, so that these can be discussed with the Associate Directors of Research in top level planning. Many valuable top level factors evolve from this important principle.

The last principle of budgeting is called the "Principle of Total Budgeting". In dealing with budgets in pieces, there is danger that the individual pieces will get out of phase in their relations with one another. To avoid this, the various pieces are brought together for over-all review in each stage of the formulation process. On the broadest scale, the Laboratory budget, as a whole, must be examined before it can be determined that each of the budget parts are reasonable. This principle ties in closely with the second phase of "Graduated Accuracy", the sum of the parts must equal the total at each stage of development - - The Branch, Division, Department, and the Laboratory levels.

Before leaving these six principles, a brief picture of the process that the Budget staff goes through in coordinating the scientific planning with translations into manpower and monetary requirements, can be presented. Upon the initial review of the estimates which are built up to the total, the Budget staff returns to the Branches of each Division and reviews the program requirements





of each new job with the individual manager and their Branch Heads. In this review, all of the points revealed by applying the six principles outlined above, are brought out, and by mutual consideration, the estimates are reworked as may be necessary, the program managers and Branch Heads accepting full responsibility for the reasonableness of the final decisions. These are reviewed at the Division level, where any differences of opinion are further reviewed and resolved. Upon completion of this review, the entire plan is laid before the committee of the Research Associates for final consideration of individual problems as well as conformity to the over-all laboratory research policy and the requirements for each field of research. This procedure is carried through religiously with each six months budget review.

The basic form by which these budgets are developed at the "Grassroots" level, and upon which all reviews are made, is the A-1 Problem Budget Estimate as shown in Figure 8. As can be seen in items 2 through 8, the identification section in the top right portion of the form establishes the complete references of the particular job, both internally, and within the Navy research program. The program manager must estimate all manpower requirements and other routine costs (shop costs) both in manpower and in estimated materials, for the three budget years. He must also consider the overhead costs he will bear in conducting the research, arriving at the total cost of conducting the job. It should be noted that under Division costs on the fourth line, is the



## FORM A-1 PROBLEM BUDGET ESTIMATE (Fall, 1954)

1a. SHORT TITLE:

b. DESCRIPTION: (To be used for new problems)

2. NRL Problem No.

3. Division

4. Branch

5. Bureau Problem No.

6. RDB No.

7. Operational  
Requirement8. SOURCES OF FINANCIAL SUPPORT  
Detail on Reverse.  
Answer all questions.

FINANCIAL ESTIMATES	FISCAL YEAR 1955				FY 1956		FY 1957	
	7/1/54 - 12/31/54	1/1/55 - 6/30/55	7/1/55 - 6/30/56	7/1/56 - 6/30/57				
9 COST ELEMENT	M-W	Amount	M-W	Amount	M-W	Amount	M-W	Amount
<u>a DIVISION COSTS:</u>								
IVb Sal. 5 11								
Summers 5 11								
Overtime 5 14								
Accrued								
Leave 5 15	X		X		X		X	
Travel 5 21	X		X		X		X	
Supplies								
& Mat'ls. 5 81	X		X		X		X	
Maj. Contr. Serv.								
& Procure. 5 71	X		X		X		X	
Transport. 5 31	X		X		X		X	
Commun. 5 41	X		X		X		X	
<u>b ESD COSTS:</u>								
IVb Sal 52311								
Non-IVb								
Salaries 52312								
Non-Sal.								
Costs 52381	X		X		X		X	
<u>c PW COSTS:</u> (52511)								
PW Salar. 52512								
Non-Salar. (52571)								
Costs 52581	X		X		X		X	
<u>d VTMS COSTS:</u>								
VTMS Sal. 55211								
Non-Sal.								
Costs 55281	X		X		X		X	
<u>e OTHER: (CBA, TID,</u>								
NAREC --Sal. 5 11								
Non-Sal.								
Costs 5 81	X		X		X		X	
<u>9 DIRECT TOTALS</u>								
<u>f OVERHEAD:</u>								
Gen. & Adm. 88888								
Division								
Indirect 99999								
Subtotal								
Overhead	X		X		X		X	
<u>9 TOTAL COST</u>	X		X		X		X	

Round dollar estimates to nearest \$100.

(Continued on Reverse)







item "Major Contractual Services and Procurements. This is important when reviewing the reverse side of A-1, in Figure 9. Here we see that the bottom section contains the detailed information which is required for those items of significant variation. Here then, is laid out for review for top management the program managers estimate of what he believes major funds should be expended on for the conduct of research. He must justify this completely - especially when it is realized that the least item would support one research person for one year. In the middle of the form is the space in which the program manager reveals his knowledge of the interest of sponsors, the agreements reached on support of the problem, the nature of the research in terms of the financial support, and where differences of opinion exists where planning is still in the negotiation stage, and the amount which each sponsor should assume in the conduct of the effort. Here again is emphasized the coordinating responsibility of the Comptroller; on the basis of this statement on each problem, the source plan is laid out, and the Budget staff follow through in negotiations with each of the sponsoring agencies.

The working procedure of placing the budget thus formulated into operation internally can now be discussed briefly. At the start of each six month period, the Budget staff lay out the job order plan on the basis of the basic A-1 forms, as finally agreed upon and approved by top management, as outlined above.



8. SOURCES OF FINANCIAL SUPPORT: (FISCAL YEAR 1956)

To facilitate preliminary 1956 planning, financial support information is requested in the following chart. The chart is designed to answer the questions -- (1) should this work be supported by other bureaus and (2) what amount will probably be supplied by them. If the research problem is of an applied, development, or test nature which should be supported by other bureaus or agencies, these activities and the percentages of support are to be indicated in columns 1 and 2. Research, Navy is listed for those problems which should be partially or wholly supported by ONR.

Column 3 is to reflect the division's appraisal of the percentage and amounts which the supporting agencies will probably furnish, not necessarily the same as the percentages indicated by column 2. Name and code of the bureau or agency person who has cognizance or interest in this problem is to be listed in column 4.

The information obtained in column 2 will be used by Budget as a guideline to officially inform interested bureaus of the amount of support desired by the Laboratory.

[illegible]

## 10. MAJOR CONTRACTUAL SERVICES AND PROCUREMENT (ITEMS OF \$5,000 AND OVER)

DESCRIPTION	FISCAL YEAR 1955		FY 1956	FY 1957
	7/1/54-12/31/54	1/1/55-6/30/55	7/1/55-6/30/56	7/1/56-6/30/57
TOTAL (Should agree with 9a - Major Contr. Serv. and Procurements)				

FIGURE 9





The first step is to notify all interested parties of the assignment of a specific job. On the face of the form shown in Figure 10 is detailed all of the information for the establishment of the job; the specific job order number which identifies not only the job, but where it fits in the Laboratory scientific program; the responsible Division, the Branch, and the Unit, the short title or purpose of the job, the identification within the research program of the Navy. Also included is the amount of funds assigned for the six month period involved (in the case of the first half year) in regards to funds for the year (in the case of the second six months of the year) This is signed by the Comptroller personally, after review through the proper steps in the Budget Division, and internally by the Assistant Comptroller for Budget.

The reverse of this form is shown in Figure 11, and it specifies the source or sources of funds which will be utilized by the Laboratory in supporting the research effort. This is, of course, the reflection of the firming up of the source plan mentioned earlier, and shows the final agreements of sponsors in placing funds at the disposal of the Laboratory. In some cases where multiple sources will sponsor a particular effort, they will be assigned priorities of billing in accordance with the plan for utilization during the year as developed, again, in the source plan.





## PURPOSE

Comptroller

DETAILS OF ALLOCATED SOURCES SHOWN ON REVERSE SIDE.

NAVY-DPPO PRNC, WASH., D.C.



DATE	CHANGE	LIMITATION	DATE	CHANGE	LIMITATION	DATE	CHANGE	LIMITATION
SOURCE:			SOURCE:			SOURCE:		
BILLING PRIORITY:			BILLING PRIORITY:			BILLING PRIORITY:		
SOURCE:			SOURCE:			SOURCE:		
BILLING PRIORITY:			BILLING PRIORITY:			BILLING PRIORITY:		
SOURCE:			SOURCE:			SOURCE:		
BILLING PRIORITY:			BILLING PRIORITY:			BILLING PRIORITY:		
SOURCE:			SOURCE:			SOURCE:		
BILLING PRIORITY:			BILLING PRIORITY:			BILLING PRIORITY:		
SOURCE:			SOURCE:			SOURCE:		
BILLING PRIORITY:			BILLING PRIORITY:			BILLING PRIORITY:		





SECTION VI  
ACCOUNTING AND REPORTING



One of the four major steps involved in formulating the Laboratory's approach to financial management is Accounting - - the parallel function of Budgeting. It consists of the recording of dynamic data and the synthesizing of presentation of the dollar facts as they occur related to the budget or financial plan. The following is then a brief view of the accounting phase as it performs this function.

The first report made is called the Job Order Status Report, a voluminous tome run by machine accounting techniques as soon as possible after the close of each calendar month; the aim is to get it out to the Divisions within five to eight working days after the close of the month. The report identifies the Job Order, the area in which the charges occurred, the allocation made to the Job order on the authorization mentioned above, the labor hours in each area of effort, the current month's activity, the cumulative activity to date, and the unused funds remaining for the conduct of the job to completion, or for the remainder of the accounting period. This report is on an obligation basis, so that the program manager may think in terms of usable funds remaining. It is a reflection of his check book balance, instead of the bank statement which he would have to reconcile by taking into account his outstanding checks. This statement has no reference to appropriation or allotment accounting, but is a reflection of the budget planning for the conduct of a research job. It was designed to give the research manager the final results on the basis of the



planning which he did and for which he is responsible.

Up to this point has been mentioned only the General and Administrative functions. They present far less of a problem in the operations of the Laboratory from a financial viewpoint. As can be appreciated, there are a few significant variations encountered in these functions, so financial planning is relatively simple. However, reporting is on the same basis as on research problems; the "function" in the general and administrative area is the base unit just as the research problem, a job order, is the basic unit for the research divisions.

The Functional Status Reports furnished to the Branch Heads of the General and Administrative Divisions are similar to the composites as shown in the Annual Financial Statement.<sup>22</sup> These are furnished at the same time the Job Order Status Report are furnished to the Scientific Divisions.

Each month after these reports are made, the data on expenditures of obligations are sorted and run on various forms for the completion of the other phases of the accounting operations, and after posting of the records the financial statements are prepared. A few of the significant statements included in the financial statement are:<sup>23</sup>

1. Research Cost Statement which summarizes the total accrued costs which have been incurred in the Division on all job orders, as well as the divisional indirect costs. It gives comparative data showing the present

22. ANNUAL FINANCIAL STATEMENTS, (1954) Naval Research Laboratory

23. Ibid





month's operation, past month, cumulative costs to date, and the comparison to the cumulative budget to date. The various elements of costs are shown, broken down by routine operating costs incurred by shop operations directly for programs of research, the overhead charges incurred, and the major contractual services and procurements. The total is therefore the total Laboratory costs incurred in the conduct of research in this division.

2. For each General and Administrative Division a similar Cost Statement is prepared showing in the same format, the cost elements in which the expenditures have occurred, the direct support to research effort that has been incurred, and the remainder which is general and administrative overhead.
3. Finally for the Laboratory as a whole, the Statement of Income and Cost of Operations is prepared <sup>24</sup> with the same comparative data of this month, last month, cumulative to date, and budget cumulative to date, the major costs elements are summarized, Since the income is derived from the charges to sponsors appropriations after the accounting has been completed each month, the statement reflects the income actually accrued at the end of the month, which lags one month the costs incurred.

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24. Ibid



It is necessary to have a research job order in progress to show as a deduction from total costs incurred in order to arrive at costs compared to income. The difference is the over or under application of overhead or predetermined rates, and the unplanned other income in small amount.

This then summarizes the final results of operations each month and to date, and is the medium by which the Laboratory reports on the financial aspects of its operations to the higher echelons as well as top management.

As a by-product, the Assistant Comptroller for Budget prepares the source plan after all sponsor plans for the conduct of research are firmed up. As these funds are received, they are controlled through the source plan and recorded in the accounts in the General Accounting Branch of the Accounts Division, and the funds are allocated to the appropriate job for which they were designated; in the priority in which the costs occurring are to be obligated or charged. For each month, after the costs and obligations of each research job are synthesized by the machine accounting process, as shown on the Job Order Status Report, the costs accrued and obligations outstanding are the subject of a special "billing run", which the accountants then post against the appropriate source records. Upon the completion of the posting of the accounts, the reports to the individual sponsors showing all appropriation sources, amounts transferred to the Laboratory control, total obligations and costs incurred, unobligated balances, and unexpended balances are prepared on Form DD412, in







Figure 12. This record is then used as the basis for the preparation of the Standard Form 1080, shown as Figure 13. The cycle is usually completed by the third week of each month, and the 1080's are processed by the Disbursing Division through the normal Navy channels.







## BETWEEN APPROPRIATIONS AND/OR FUNDS

D. O. Vou. No. \_\_\_\_\_

Bu. Vou. No. \_\_\_\_\_

Bill No. \_\_\_\_\_

ACCOUNTS OF

J. S. \_\_\_\_\_, Dr.  
(Department, establishment, bureau, or office billed)

TO \_\_\_\_\_  
(Department, establishment, bureau, or office billing)

[illegible]

CERTIFICATE OF BILLING OFFICE

Date \_\_\_\_\_

Remittance in payment hereof should be sent to—

I certify that the above bill is correct and just; that the items are computed in accordance with the cost of labor and/or material; and that the amounts listed are properly creditable to the appropriation(s) and/or fund(s) as indicated below; or that the advance payment requested is authorized by law and is proper.

Accountable officer in whose account collection will appear:

Name \_\_\_\_\_

Symbol

Title

## ACCOUNTING CLASSIFICATION (for completion by the billing office)

SYMBOL	TITLE OF APPROPRIATION OR FUND TO BE CREDITED	LIMITATION	APPROPRIATION
		Amount	Amount

CERTIFICATE OF OFFICE BILLED

I certify that the above articles were received and accepted or the services performed as stated and should be charged to the appropriation(s) and/or fund(s) as indicated below; or that the advance payment requested is approved and should be paid as indicated.

\_\_\_\_\_, Authorized Certifying Officer.

Date \_\_\_\_\_

Title

## ACCOUNTING CLASSIFICATION (for completion by the office billed)

SYMBOL	TITLE OF APPROPRIATION OR FUND TO BE CHARGED	LIMITATION	APPROPRIATION
		Amount	Amount

ALLOTMENT SYMBOL	AMOUNT	OBLIGATIONS LIQUIDATED	COST ACCOUNT		OBJECTIVE CLASSIFICATION	
			Symbol	Amount	Symbol	Amount

paid by check drawn on Treasurer of the U.S., No. \_\_\_\_\_, dated \_\_\_\_\_





SECTION VII

RESUME AND CONCLUSIONS



In this paper, an attempt was made to illustrate how financial management is practiced at the Naval Research Laboratory. It was necessary to concentrate to a large extent on the authority, responsibility, and the staff relationship of the Office of the Comptroller in this operation. By implication was shown the use of the second tool Congress provided in Title IV - - The Working Capital Fund. The budgeting methods and accounting techniques based upon that budget would have hardly expressed the translation of the planning for research into manpower and monetary requirements if the techniques furnished in the Working Capital Fund were denied.

The aim of the Office of the Comptroller has been to promote efficiency and economy in the operation of the various programs. Consequently, the Comptroller in attaining his objective by contributing to the most effective and efficient execution of authorized programs, provides staff services of sound financial planning to support operations. He furnishes a continuous service of comparison, analysis, and presentation of actual performance with assigned programs and objectives. He evaluates costs in energy, time, materials, and money so as to serve as a basis for timely decisions by the Director, and assures for the Director the most effective balance of availability and use of resources.

To say that the ultimate in financial management has been reached would be indeed fallacious. Such problems, as the use of the Naval Industrial Fund per se, and the use of the Accrual Method of Accounting, have received some rather strong criticisms from many quarters. Thus, the fiscal year of 1955





represents the second complete year of operation under the financial plan developed by the Naval Research Laboratory's Comptroller within the Naval Industrial Fund system of accounting. During this period the problem of adjusting Laboratory financing and accounting to the pattern of Industrial Fund decentralized control were defined and many of the problems solved or placed in position for solution. Many problems continue to be unsolved and require further intensive study and analysis before being considered completely resolved to the satisfaction of management of the Laboratory.

The adjustments mentioned above are steps forward in the evolution of management control of research, but it is also realized that organized research is a vast and growing activity. The techniques of management and the development of proper management attitudes and "know-how" are a tremendous challenge and will be for many years to come.



## BIBLIOGRAPHY

### Books

- Bradshaw and Hull, Editors, Controllership in Modern Management, (Irwin & Co Chicago, Ill., 1950)
- DeWitt, H. M. Jr., Comptrollership in the Armed Forces, (Institute of Engineering, Washington, D. C., 1952)
- Doris, Lillian, Corporate Treasurer's and Controller's Handbook, (Prentice-Hall, N. Y., 1951)
- Given, W. B. Jr., Reaching Out in Management, (Harper, N. Y. 1953)
- Heckert and Wilson, Controllership, (Roland Press, N. Y. 1952)
- Jackson, J. Hugh, The Controller, (Harvard University Press, 1949)
- Learned, E. P., and others, Executive Action, (Harvard University Press, 1951)
- Metropolitan Life Insurance Company, Functions of the Controller, (1947)

### Public Documents

- Public Law 162, 80th Congress, Reorganization of the National Security Organization, (July 7, 1947)
- Public Law 216, 81st Congress, National Security Act Ammendments, (August 10, 1943)
- Report by the Hoover Commission, Budgeting and Accounting, (February 1949)

### Reports

- Breed, E. H., Cdr., USN., Financial Management at the Naval Research Laboratory, (January 1, 1953)
- Bureau of Aeronautics, Comptrollership News, (November 1954)
- Charter, Navy Comptroller, (June 1950)
- Deputy Chief of Staff, USAF., Comptroller, (no date)



Grant, C. S., and others, Budgeting for Research at the Naval Research Laboratory, (December 13, 1950)

Manual of Administration, Organization of the Naval Research Laboratory, (1954)

Report of Committee, Organization of the Department of the Navy, (April 16, 1954)

Research at N. R. L., (1953)

SecNav Instruction 5400.4, Establishment of Comptroller etc., (November 18, 1953)

SecNav Instruction 5430.20, Establishment of the Office of Naval Research, (June 24, 1954)

#### Articles

Padget, R. M., "Tomorrow's Responsibilities for the Controller", The Controller, (January 1947)

Pierce, J. L., "Controllershship and Accounting: A Contrast", The Controller (September, 1953)



